

cover part of what is now *Helianthus*, but it will not do to refer to that genus everything with squamellae, regardless of other characters. *Harpalium* Cass., 1818, which includes certain perennials, is older than *Viguiera* H.B.K., 1820. There are other names which may perhaps be rescued from the synonymy, but even if we grant the necessity for generic revision, it is as yet too early to say where the lines should be drawn and what names should be used. Mr. S. Alexander's root-characters for the perennials will certainly have to be taken into account. The new system should correspond to the actual relationships of the plants, and in order to establish it properly it will be necessary to consider the phylogeny of the whole group. For this purpose all characters are of interest, and all species, not excluding those of South America.

## THE GALAX ODOR

BY E. F. ANDREWS

Only those who are familiar with the *Galax aphylla* in its native habitat are likely to have had their attention called to the peculiar odor characteristic of this pretty little plant. None of the handbooks with which I am acquainted make any mention of it, and the only allusion to it that I have met with in botanical writings describes it as "a polecat smell"—which may well suggest a doubt to the minds of the initiated whether the writer himself had ever smelt a polecat. There is nothing sharp or pungent about the galax, like the knock-down odor of the polecat, and the misnomer, "skunk cabbage," sometimes applied to it in the Georgia mountains, was no doubt suggested by the malodorous reputation of the true skunk cabbage (*Symplocarpus foetidus*) and intended to emphasize the abominableness of the smell rather than to describe its quality. In the galax, it is a faint, sickly carrion scent, too vague and elusive to attract attention except where the plant occurs in large masses, as it always does in its favorite home on the shady slopes of the Southern Appalachians. On Lavender Mountain, in Floyd County, Georgia, where these observations were made, the

presence of a galax bed is often advertised by the scent at a distance of from twenty to thirty paces.

The strength of the odor varies greatly at different times, and is often reduced to zero when drought, cold, or other unfavorable conditions impair the health and vigor of the plant—a fact which will account for the failure of many observers to detect it. Specimens when removed from the soil lose their odor in a short time, and for this reason, laboratory students and people who know the galax only through its popular use for decorative



FIG. 1. Bed of galax in bloom, Lavender Mountain, Ga.

purposes are not likely to become acquainted with its distinctive odor. I once packed carefully a number of vigorously growing, and equally vigorous smelling specimens with some of the mould in which they were rooted and sent them to the Agricultural Department at Washington for examination, but every trace of the smell had vanished by the time they reached there. It seems to reside principally in the leaves and is most perceptible in warm weather, when the plant is in its best condition. In

winter and during periods of drought it is entirely absent. My records, extending at irregular intervals over two years (from July, 1912, to June, 1914) report no trace of it as late as the middle of May when the plant is in full flower, and this fact gives good ground for the inference that it has no connection with the process of fertilization. It is proper to state, however, that the years to which my observations refer—1912, 1913, 1914—have been phenomenally dry in this section, and under normal conditions the showing might have been different.

While strictly a shade-loving and moisture-loving plant, the galax never grows in swampy, undrained soil. It loves to be near the water, but not in it, and is seldom found on level land. Its favorite abode is on the steep, well-drained slopes of shady ravines, along the high, shelving banks of mountain streams, and in the crevices, or sometimes on the overhanging brow of rocky cliffs. Though technically an evergreen, the leaves, except in protected situations, turn a beautiful brownish red in winter and persist on the rootstock until the latter part of May, when they gradually shrivel up and give place to the young foliage of the season.

One of the popular names of the species, "beetle plant" suggests the inquiry whether its odor may not possess attractions for some "muck-raking" member of the beetle tribe whose visits might be in some way beneficial to the plant. To determine whether this was the case, I looked for beetles in every bed that I visited. The result was that in one, I found a fragment of a beetle shard and accidentally scared two of the insects out of a clump of grass near by; while once, and only once, I came upon a lonely tramp of a beetle running wildly about as if lost in a jungle of galax. As this experience is not sufficient to build a theory on, and the scent is apparently of no use in the process of fertilization, the part it plays in the economy of the plant has never yet, so far as I know, been explained.